

## EXHIBIT A

**Attorney Docket No. 7969-074**  
**U.S. Application Serial No. 09/164,714**  
**Claims As Concurrently Amended**

9. (Amended) An isolated nucleic acid molecule encoding an OMP21 protein wherein said OMP21 protein has an apparent molecular weight of about 16 kD to about 20 kD as determined by SDS-PAGE using trypsin inhibitor and carbonic anhydrase, respectively, as 21.5 kD and 31 kD molecular weight standards and comprises the amino acid sequence of SEQ ID NO: 1 or 7, or a complement of said nucleic acid molecule.

11. (Amended) An isolated nucleic acid molecule encoding OMP21 protein obtainable from a *M. catarrhalis* strain, said OMP21 protein having an apparent molecular weight of about 16 kD to about 20 kD as determined by SDS-PAGE, using trypsin inhibitor and carbonic anhydrase, respectively, as 21.5 kD and 31 kD molecular weight standards and wherein said nucleic acid molecule comprises a sequence selected from the group consisting of:

- a) a nucleic acid sequence of any of SEQ ID NO: 2-6 and 8-20;
- b) a nucleic acid sequence encoding the deduced amino acid sequence of SEQ ID NO: 1 or 7;
- c) a nucleic acid sequence which hybridizes at 68 degrees C in 0.5M NaHPO<sub>4</sub> (pH7.2)/1 mM EDTA/ 7% SDS to any one of the sequences of a) or b); and
- d) a nucleic acid sequence which is at least 70% identical to the sequence of SEQ ID NO. 6 when identity is determined using the BLASTN algorithm, said sequence encoding a polypeptide that elicits an immune response to *M. catarrhalis* when administered to an animal;

or a complement of said nucleic acid molecule.

12. (Amended) Plasmid pOMP21X obtainable from *E. coli* Top 10F' (pOMP21X), as deposited with the ATCC and assigned accession number 98878.

13. (Amended) A recombinant vector comprising the nucleic acid molecule of claim 9 or 11, or the plasmid of claim 12.

16. (Amended) A host cell transformed with the vector of claim 13.
20. (Amended) A recombinant expression vector comprising the nucleic acid molecule of claim 9 or 11, or the plasmid of claim 12 operably linked to a nucleic acid for transcription and translation of said nucleic acid molecule encoding the OMP21 protein.
71. (New) The isolated nucleic acid molecule of claim 9 or 11 further comprising a heterologous sequence.
72. (New) The isolated nucleic acid molecule of claim 71 wherein the heterologous sequence is fused to the 5' terminus of said molecule.
73. (New) The isolated nucleic acid molecule of claim 71 wherein the heterologous sequence is fused to the 3' terminus of said molecule.
74. (New) The isolated nucleic acid molecule of claim 71 wherein the heterologous sequence is a nucleic acid encoding a polypeptide selected from the group consisting of polypeptides comprising:
- a) pre- and/or pro- sequences that facilitate the transport, translocation and/or processing of the OMP21-derived polypeptide in a host cell;
  - b) affinity purification sequences; and
  - c) sequences that comprise one or more immunogenic epitope(s) of a surface exposed protein of a microbial pathogen.
75. (New) A recombinant expression vector comprising the nucleic acid molecule of claim 71.
76. (New) A host cell transformed with the expression vector of claim 75.
77. (New) A host cell transformed with the expression vector of claim 20.

78. (New) An isolated nucleic acid molecule encoding a fragment of an OMP21 protein; said fragment comprising at least 10 amino acids and having an antigenic epitope of the amino acid sequence of SEQ ID NO: 7.